Slackers and Zealots: Civil Service, Policy Discretion, and Bureaucratic Expertise

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We investigate how aspects of "civil service" systems of personnel management interact with bureaucratic discretion to create expert bureaucracies populated by policy-motivated agents. We construct a dynamic model in which bureaucrats may invest in (relationship-specific) policy expertise and may or may not be interested in policy choices per se. The legislature makes sequentially rational grants of discretion, which serve as incentives for expertise investment and continued service only for policy-motivated bureaucrats. Bureaucratic policy preferences and the legislature's agency problem vis-à-vis bureaucracies develop endogenously in the model. Bureaucratic expertise can be supported in equilibrium only at a cost of its politicization; "neutral competence" is inconsistent with strategic incentives of bureaucrats. We identify several conditions that support the development of an expert bureaucracy in equilibrium, including security of job tenure and control over policy issues for policy-motivated bureaucrats.

Civil service restrictions on public personnel management—on selection of employees, job assignment and reassignment, pay equality within job grades, and especially near guarantees of lifetime job tenure—are commonly lamented as a major source of public sector inefficiency, an outdated system created in response to a problem that no longer exists.

Indeed, major provisions of the merit system in place in the United States and many industrialized nations, as well as states and municipal governments in the United States, do seem to weaken public sector employees' extrinsic incentives to be responsive and energetic in pursuing their duties. The architects of American civil service hardly considered this lack of extrinsic incentives problematic, because they assumed that a cadre of "neutrally competent" (Kaufman 1956) nonpoliticized experts would (eventually) fill out the ranks of the bureaucracy. These faithful agents were to offer comprehensive, unbiased analysis of alternatives followed by dutiful, efficient administration of the ones eventually chosen by political principals.

Observers (including Kaufman himself) have long since noted that the achievement of neutral competence is at best questionable, that its very possibility is doubtful (Hammond and Thomas 1989), and that its value to politicians (who may value "responsive" competence over the neutral variety) is debatable even if it could be or has been achieved (Moe 1985). Meanwhile, the institutions designed to create neutral competence are very much reality. Many civil service provisions now have a sizable supporting constituency with a major, concentrated interest in their maintenance (Johnson and Libecap 1994). The debate over whether 170,000 (by White House estimates) federal employees moved into the Department of Homeland Security in 2002 would be subject to civil service protection only underscores that the coverage of a much larger portion of the federal workforce is beyond debate. Despite regular calls for change and reform, civil service in some form is here to stay.

In this article we argue that, in spite of its failure to achieve the ostensible goal of neutral competence, and in spite of the managerial rigidities it creates, civil service

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underpins several crucial characteristics of the contemporary American bureaucracy—especially the expertise that partially legitimizes its role in a democratic policy process. In a formal model we show that, while not the reason they created it,[1] civil service offers political principals the best outcomes available (in a sense that we will make precise) among institutions that respect a set of (1) information asymmetries, (2) self-selection constraints, and (3) contractual limitations that we postulate. To explicate this argument, we develop a formal model in which bureaucratic policy preferences, and the legislature's agency problems with respect to bureaucracies, emerge endogenously. This occurs through the self-selection of specific types of policy-motivated bureaucrats into public service, in response to the institutions and politics of discretion chosen by the legislature.

There are several important building blocks of our argument. First, bureaucratic expertise is endogenous, costly, and relationship specific. That is, bureaucrats may (and in equilibrium, do) develop policy expertise, but that development must be induced by incentives in public service.[2] Developing a cadre of experts is obviously more complicated than simply declaring that it should exist, and bureaucrats are not born with all the skills they need to expand bureaucratic capacity and expertise.[3] Furthermore, insofar as expertise in a specific policy area is most valuable to the bureaucrat provided that employment in public service persists, it is relationship specific. For example, mastery of the fine points of the policy process, an agency's accounting and records system, and substantive policy details is much less valuable in alternative employment than it is in public service. Because expertise is both costly and relationship specific, early investments in it create a possible "hold up" problem (see Hart 1995, Klein, Crawford, and Alchian 1978, and Williamson 1975 for classic expositions) for the bureaucrat. If the investment is made, but the relationship does not continue or the expertise is used in support of policies the agent does not prefer, the agent may not reap gains exceeding the cost of investment. This becomes a problem if it causes bureaucrats to hold back on expertise investment in the first place. Because of this, incentives to invest in costly policy expertise are a crucial facet of personnel management institutions.[4]

Another important feature in our model is heterogeneity of public service motivation among bureaucrats. Bureaucrats in our model can be one of two types: policy motivated ("zealots") or policy indifferent ("slackers").[5] Some people in the population of potential public servants care about public policy per se, while others do not (Brehm and Gates 1997; Downs 1967). Simply put, we do not expect bureaucrats in an occupational safety or environmental protection office (etc.) to be a random cross section of the population in terms of their concern for these matters; that is part of why they work in these bureaucracies at all. Moreover, the ideologies and policy preferences bureaucrats do have are likely to diverge from those of political principals (Aberbach and Rockman 2000; Golden 2000),[6,7] a fact that Carpenter (2001) has documented

[1]The history and origins of American civil service are explored in Van Riper (1958), Hoogenboom (1968), and Ingraham (1995). Skowronek (1982) situates the rise of the merit system in partisan competition for votes and control of government during the Gilded Age. In a rational choice contribution, Johnson and Libecap (1994) argue that the cost of monitoring the political behavior of patronage appointees became acute as the bureaucracy grew, and merit reform alleviated this cost. More recently, Kernell and McDonald (1999) and Theriault (2003) argue that public discontent with administration grew, and legislators capitalized on civil service reform to better meet constituent desires.

[2]The classical theory of neutral competence dating from Kaufman (1956) takes bureaucratic expertise as exogenous: the problem for government is to identify it, select public servants possessing it, and keep politics out of their way. For the components of bureaucratic expertise that are general purpose, this is adequate, but for components that are relationship specific, it is not. In one sense a contribution of our model is to update this theory in light of concepts in human capital and incomplete contracts that were not understood in Kaufman's era.

[3]Our argument applies to any trait that is costly for bureaucrats to develop and useful for obtaining specific policy outcomes. Insofar as this describes aspects of both bureaucratic "capacity" and "expertise," we are somewhat loose about the distinction because it is not crucial for our argument. However, for precision in the model, we deal with what has in previous work been referred to as expertise and not capacity.

[4]We must stress at this point that our argument pertains to relationship specific expertise, not necessarily to every kind of skill or capability that individuals might possess. In the case of skills that are general and portable, incentives to invest in them are provided by their returns in the broader labor market. However, many important skills and points of expertise that make public bureaucracies function well are relationship specific (see DiPrete 1989), in that they are most valuable in specific public service applications. Importantly, as we note below in the formal model, our argument does not require that expertise be *entirely* relationship specific, only that it be at least partially relationship specific. Even if only a portion $\eta \in [0, 1]$ of the value of a skill is relationship specific (or $1 - \eta$ is forfeited upon leaving public service), our results all carry through as long as $\eta > 0$. We suppress the parameter η in our main discussion not because it is unrealistic, but because it adds extra parameters to the results that do not change their character or implications.

[5]This terminology is reminiscent of Downs (1967), who refers to bureaucrats loyal to specific policies as zealots. The precise meaning we attach to the term will become clear in the model.

[6]Aberbach and Rockman (2000) document notable changes over time in the ideologies of senior bureaucrats. Yet even in the late Reagan administration, the apex of bureaucratic conservatism in their data, career bureaucrats were much more liberal and Democratic than Congress is today, for example.

[7]Of course, these attitudes and beliefs of bureaucrats do not imply that they will act on them or that their actions need to be subject to some degree of "control" from principals. However,

extensively for the period of early bureaucratic development in the United States. Bureaucrats who do not have explicit policy preferences are useful *if* they can be motivated to develop expertise, in that they never substitute their own agendas for those of the principal. Our model is dynamic and politicians offer policy discretion to bureaucrats in each period. Discretion may be affected by the expertise investment of bureaucrats and their ideology, but not by their policy motivation, which we assume is not contractible (e.g., it is privately observed). The most important decisions are the bureaucrat's: whether to remain in public service, and whether to invest in expertise. Generally there are two classes of equilibria: a "regime of clerkship" (Carpenter 2001) in which no agents acquire expertise or seek long employment in public service (thus making this regime suitable for patronage job rotation systems), and a regime of "politicized competence" in which zealots and only zealots invest in expertise and remain in the bureaucracy throughout their careers. There is no class of equilibria in which slackers invest in expertise or remain in public service, although it would be preferable for the legislature in the absence of contractual limitations or incentive constraints, and would achieve the ideal of neutral competence (because expert slackers would disinterestedly implement the legislature's ideal policy). We discuss below how model parameters affect the existence of each type of equilibrium.

In "politicized competence" equilibria, merit system job tenure protections[8] combined with discretion setting by the legislature provide a "payment" for expertise development and self-selection into bureaucratic careers that only zealots find valuable. Merit system protection of job tenure removes some of the downside risk that bureaucrats face when developing relationship-specific expertise, because it increases the horizon over which this investment can pay off.[9] However, this alone is not enough to induce bureaucracies to invest in policy expertise, because it does not offer any positive benefit. The grant of policy discretion from the legislature, rationally chosen in response to expertise investment, fills this role. By allowing agents to bend policy to their liking, it offers "policy rents" for expertise development and a career in public service that only zealots value. A generalization of this argument is that the effects of personnel management institutions and the "politics" of bureaucratic discretion are mutually dependent, and in this case, reinforcing.[10] They are jointly sufficient and individually necessary to overcome the bureaucrat's holdup problem in our model.

Our argument links several important literatures on bureaucratic organization and politics. First, we follow Carpenter (2001) in exploring how the personnel system changes instituted by Congress and the president in the late nineteenth century caused the development of the expert bureaucracy upon which the capacity and expansion of government are based.[11] To our knowledge, this is the first article to explore the mechanisms of this change formally.[12] Second, we provide strategic underpinnings of the bureaucratic informational advantage assumed in formal models on bureaucratic expertise and capacity (e.g., Calvert, McCubbins, and Weingast 1989; Epstein and O'Halloran 1994, 1999; Huber and McCarty 2004; Huber and Shipan 2002; Gailmard 2002). More importantly, we address a tension in the principal-agent tradition of legislative-bureaucratic interaction: if an agency problem exists, it must be understood as an agency problem that the legislature itself chose in the first place. By focusing on the endogenous development of agency policy preferences, we explore the value to a principal of

both circumstantial "revealed preference" evidence—Congress does appear to find such control tools valuable (Aberbach 1990; Epstein and O'Halloran 1999; Huber and Shipan 2002; McCubbins, Noll, and Weingast 1987, 1989)—and more direct qualitative evidence—bureaucrats do at least sometimes act on their policy beliefs (Feldman 1989; Golden 2000)—support the relevance of bureaucratic attitudes and ideologies per se.

[8] In the American case, there is no single date at which tenure security was generally established. It was instituted not by the Pendleton Act in 1883 (as is sometimes supposed), but by a sequence of executive orders in the late nineteenth and early twentieth centuries. The Pendleton Act created a framework for the development of civil service and placed some mild constraints on hiring bureaucrats in "classified" positions, but did not itself classify them or "create" the civil service generally.

[9] We do not wish to argue that tenure only has benefits. It clearly limits one possible inducement that organizations can use to motivate performance from agents. Instead, we believe that the managerial problems associated with tenure security are relatively straightforward to understand, and the more interesting challenge is to understand it as part of a useful complement of institutions for structuring bureaucratic policymaking. Therefore, instead of specifying a complete model of tenure, we focus on these more interesting aspects of it. More generally, tenure being a somewhat puzzling institution, theories to explain it in general have taken myriad forms (e.g., Carmichael 1988; Harris and Weiss 1984; Milgrom and Roberts 1992). Our model bears a family resemblance to some of these, dealing with incentives to acquire and report information.

[10] The essential thrust of our argument also applies far beyond the context of bureaucratic expertise and politicization. For example, Baron (2006) makes a "supply-side" argument about media bias with a similar structure. In Baron's model, policy-motivated journalists sacrifice wages for future opportunities to slant news stories.

[11] Carpenter (2001) argues that the endogenous cultivation of high capacity is one way in which a bureaucracy can achieve autonomy from its titular principals, beyond a mere grant of discretion from principals that retain ultimate control.

[12] Ting (2005) also explores endogenous bureaucratic capacity in a formal model with contractual incompleteness. His model addresses variation in incentives for capacity building by the nature of the task(s) performed by the bureaucrat.

effectively creating its own agency problem. Third, we construct our argument in the tradition of Hammond and Thomas (1989), Miller (1993), Horn (1995), Dixit (2002), and Prendergast (2003). Like these seminal contributions to the formal analysis of public organizations, we focus on incentive compatibility and "contractual" problems addressed by organizational forms in the bureaucracy, specifically personnel management institutions embedded in a political system.

The rest of the article is organized as follows. First, we lay out the model. Then we focus optimal self-selection and expertise investment by bureaucrats, and we analyze the optimal grants of discretion from the legislature. We then conclude.

A Model of Expertise Investment, Self-Selection, and Delegation

We model the delegation of authority, selection of bureaucrats, acquisition of expertise, and implementation of policy as a noncooperative game between two players: the legislature and the bureaucrat (L and B for short). The game lasts for two periods[13] and yields a choice in each period, denoted by x^t, from a unidimensional policy space, $X = \mathbb{R}$. In each period, the legislature sets the bureaucrat's policy discretion. Denote the discretion given by the legislature to the bureaucrat in period t by $D_t \geq 0$, with D_t meaning that the bureaucrat can choose any policy $x^t \in [-D_t, D_t]$. Thus, a higher value of D_t represents a higher level of bureaucratic discretion in the sense that the bureaucrat can choose from a strictly larger set of policies to implement.

Policy outcomes are affected by the policy chosen by the bureaucrat and the *state of nature*, which encapsulates all factors other than the bureaucrat's policy decision affecting the bureaucrat's and legislature's payoffs. The state of nature in period t is denoted by $\omega^t \in \Omega \subset \mathbb{R}$. We assume that in both time periods, ω^t is independently drawn from Ω according to a cumulative distribution F that has zero mean ($\int \omega \, dF(\omega) = 0$), zero median[14] ($\int_{-\infty}^{0} dF(\omega) - \int_{0}^{\infty} dF(\omega) = 0$), and finite, strictly positive variance $\sigma_\omega > 0$. Formally, the policy outcome in time t is denoted by y^t and is determined by

$$y^t = x^t + \omega^t.$$

Each bureaucrat possesses a (privately observed) type, denoted by $\theta \in \{0, 1\}$. When $\theta = 1$, the bureaucrat cares about the policy outcome per se. We refer to such a bureaucrat as a "zealot." When $\theta = 0$, the bureaucrat does not care about policy outcomes per se and is solely interested in material rewards.[15] Such a bureaucrat is referred to as a "slacker." The ex ante probability that a bureaucrat is a zealot is denoted by $\zeta \in (0, 1)$. This probability is assumed to be common knowledge between all players.[16]

We focus on the following sequence of moves:[17]

1. L chooses first-period discretion D_1.
2. Nature chooses B's type θ and reveals it to B.
3. B chooses to invest in expertise ($s = 1$) or not invest ($s = 0$).
4. Nature chooses ω^t.
5. If $s = 1$, B learns ω^t. Otherwise, B retains his or her prior beliefs about ω^t.
6. B chooses a policy $x^t \in [-D_t, D_t]$.
7. B chooses whether to stay in government in period 2 ($g = 1$) or not ($g = 0$).
8. (a) If $g = 1$, with probability ρ, L chooses second-period discretion as a function of s (i.e., $D_2(s)$) and play continues, repeating steps 4, 5, and 6 (i.e., beginning with nature selecting ω^2).
   (b) Always if $g = 0$, and with probability $1 - \rho$ if $g = 1$, the period 1 bureaucrat earns the outside option value w, a new bureaucrat takes the job, and steps 1–6 are repeated.

Before continuing, we note that our approach prevents L from conditioning second-period decisions on first-period policy outcomes. This is an extension of a standard

[13] While we consider only the two-period case in this article, extending the game to more than two periods is straightforward and, without additional assumptions, offers no additional intuition.

[14] The assumption of zero median is made to simplify the derivation of the optimal policy choice of an uninformed bureaucrat. It could be relaxed without changing the substantive tone of the results. Additionally, our choice to center the discretionary window at $E(\omega)$ is without loss of generality so long as B must choose policy within the window. See Epstein and O'Halloran (1999) for a parametric case, and Gailmard (2006) for a more general result.

[15] Obviously, this raises the possibility that zealots may have higher (or lower) utility for any given outcomes, but none of our results depend on interpersonal comparisons of utility, so this is irrelevant.

[16] Certainly there is much self-selection of bureaucrats prior to joining the civil service. We do not model this but it would work through ζ. A bureaucrat in our model essentially learns more about its own preferences as it experiences public employment. This formulation at least preserves some slacker-bureaucrats in equilibrium (which certainly do exist; see Downs 1967), while still allowing analysis of self-selection.

[17] We have assumed for simplicity that the legislature moves first in each period, but this assumption is *not* necessary for our results to follow. This is because of the common knowledge of best responding at each subgame reached with positive probability in a perfect Bayesian equilibrium.

assumption in the literature: L cannot observe or cannot act on policy outcomes to "discipline" B until the game is over. Allowing L to punish B for policy outcomes represents an interesting avenue for future work.

The payoffs for the legislature are given by

$$u_L = -|y^1| - |y^2|.$$

Thus L measures the (dis)utility of a policy choice by its distance from 0, which is L's ideal policy outcome. Further, there is no discounting over time in L's utility.

Denoting the bureaucrat's most preferred policy outcome by $p_B \geq 0$, the bureaucrat's period 1 payoffs are given by

$$u_B^1 = -\theta|p_B - y^1| - cs + r,$$

where r (a parameter) is the material payment for government employment,[18] p_B (a parameter) reflects ideological conflict with the legislature,[19] c (also a parameter) is the cost of obtaining expertise about policy uncertainty ω, and $s \in \{0, 1\}$ (a choice variable for the bureaucrat) denotes whether B obtained expertise. For any policy outcome y, let $\pi(y) \equiv -|p_B - y|$ denote the bureaucrat's policy utility (leaving the bureaucrat's ideal point implicit). Then, given a choice of policy equal to y^2 in the second period, the bureaucrat's period 2 payoffs are given by

$$u_B^2 = \begin{cases} r + \theta\pi(y^2) & \text{if } g = 1 \quad (\text{i.e., } B \text{ remains in office}) \\ w + \theta\pi(y^2) & \text{if } g = 0 \quad (\text{i.e., } B \text{ leaves office for an exogenous wage of } w). \end{cases}$$

The bureaucrat's overall utility in the game is simply the (undiscounted) sum of utilities from each period. That B's period 2 utility may depend on policy whether it remains in public service or not is a key feature of the model. This representation plays a crucial role in the incentive effects of civil service that we identify.

The probability $\rho \in [0, 1]$ represents an exogenous probability that the bureaucrat does not continue in office even if it tries to remain in the civil service ($g = 1$). One facet of bureaucracy that ρ captures is the extent of tenure security: if ρ is large then the bureaucrat is likely to be able to remain in public service if it desires to do so.

Before turning to the analysis, we specify four assumptions to streamline it and focus on interesting cases. Ruling out "uninteresting" cases does not mean that those cases are conceptually impossible or empirically irrelevant. Rather, the scenarios we rule out with our assumptions are uninteresting because our theory implies that bureaucratic competence is either guaranteed, or impossible to attain, in the equilibria of those cases.

Assumption 1 (Outside option). *The value of the second-period outside option exceeds the second-period government wage: $w > r$.*

A wide variety of wage profiles over time is consistent with our results. The values of r and w can each grow over time at different rates or respond (for both types θ) to some extent to expertise investment, and w can grow because of first-period public service (as might reflect a "revolving door" scenario, whereby former bureaucrats parlay experience and networks in bureaucracy into lucrative private employment). The important assumptions for our results are that (*i*) $w > r$ at $t = 2$, and (*ii*) w is not so strongly affected by B's expertise investment that slackers are induced to invest at $t = 1$. (Given that $w > r$ in period 2, it is not crucial that r be completely unrelated to first-period expertise investment, though we assume so partly for substantive reasons (as explained in footnote 18) and partly for presentational reasons (to suppress extraneous parameters that would not affect the character of our results).

If $r \geq w$, *every* bureaucrat will attempt to remain in the bureaucracy in the second period—regardless of the bureaucrat's type, other parameter values, or other endogenous decisions. Empirically this assumption has been long debated, but for senior bureaucratic managers and analysts, and controlling for cost of living, contemporary evidence supports it (Congressional Budget Office 1997). Van Riper (1958, chap. 7) offers some indirect evidence that real wages, and certainly the social status, of government service were low compared to private sector options in the Gilded Age, the period of critical early development of the modern civil service.

[18] We explicitly rule out the possibility of monetary rewards as an incentive device for expertise acquisition. First, this provides a more faithful representation of the incentives at work in actual U.S. civil service, where explicit pecuniary incentives have been only recently introduced and limited in scope. To model the incentive effects of this institution, the first place to start is a model without explicit financial incentive contracts. Second, our key results—about the incentive effect of discretion, self-selection of zealots into public service, and the value of secure tenure—apply as well to a model in which the agent's expertise investment is actually unobservable by the legislature, so that monetary incentives for expertise are not practicable. We elaborate on this point in footnote 29.

[19] Thus as is typical in the literature we assume some degree of policy conflict between the legislature and agency. Since we do not restrict the value of p_B, our results hold as long as *some* policy conflict exists. If this conflict is entirely absent, neutral competence is sustainable in equilibrium because type 1 bureaucrats acquire expertise and have identical preferences with the legislature about how to use it. However, even though Congress can always make changes in the profile of agents staffing a bureaucracy, complete preference harmony seems to be an exceptional case. Even authority to change the type of agents does not completely remake agencies with every change in legislative policy goals.

Assumption 2 (Policy sensitivity). *The cost of acquiring relationship-specific expertise, c, is neither too small nor too large. Formally,*

$$2\int_{\Omega}\pi(\omega)F(d\omega) > c > \int_{\Omega}\pi(\omega)F(d\omega).$$

As we discuss in more detail later in the article, Assumption 2 implies that zealots care enough about policy to acquire relationship-specific skills (i.e., incur the cost c) for long-term employment, but not enough to justify acquiring such expertise for use only in a single period. If the first inequality did not hold, then the cost of acquiring expertise, c, would exceed *any* potential policy-based benefits that the legislature can offer to the bureaucrat. If the second inequality did not hold, then even zealots hired only for the short term would voluntarily become experts during their employment.

Assumption 3 (Uninformed bureaucrats). *For $s = 0$ and $\theta = 0$, B will choose the same policy as that which would be chosen by an uninformed type $\theta = 1$ bureaucrat.*

Assumption 3 ensures that the model's predictions are not driven by the behavior of otherwise indifferent actors. Importantly, this assumption strengthens our results: if we altered the assumed behavior of uninformed slackers, zealots would have an even greater incentive to remain in office in the second period (because they would sacrifice more in expectation by leaving). Moreover, leaving the behavior of uninformed slackers as a degree of freedom adds uninteresting complication to the analysis (it increases the number of equilibria that the legislature does not prefer).

Assumption 4 (Overlapping generations). *A newly hired zealot will acquire information in the second period if it is in the interest of zealots to acquire information in the first period.*

The motivation behind Assumption 4 is twofold: conveniently, it captures the flavor of a stationary equilibrium within an infinitely repeated version of the model. More importantly, though, it actually represents the "hardest case" for our results.[20] Specifically, this assumption reduces the incentive of an informed zealot to stay in the civil service: if an expert zealot believed that his or her replacement would *not* acquire expertise, regardless of the replacement's type, then the zealot's policy preferences would motivate him or her to forego a larger outside wage option in order to ensure that policy was made by an informed bureaucrat (namely, him or her). Thus, if the legislature can use discretion to induce expertise acquisition by bureaucrats with Assumption 4, then it could also clearly do so if the assumption is relaxed.[21]

Bureaucrats' Policy Choices, Expertise Acquisition, and Self-Selection

In this section we analyze B's optimal decisions in the model presented above. Perfect Bayesian equilibrium (PBE) is the appropriate concept to use since L must choose D without knowing the prior choices of nature, but we leave off-path beliefs unspecified because they are uninteresting in this setting. In a PBE, the bureaucrat chooses its actions based on its type θ, the discretion offered by the legislature in the first period, and the bureaucrat's (correct) beliefs about the legislature's response to these actions in the second period. Additionally, the legislature must make sequentially rational and payoff-maximizing choices about discretion levels in both periods.

For the remainder, we denote the equilibrium expertise acquisition strategy of a bureaucrat with type θ by $s^*(\theta)$. We denote the legislature's equilibrium choice of discretion levels $D_t^*(s)$, for period t and expertise acquisition s, by the profile $D^* = (D_1^*, D_2^*(0), D_2^*(1))$.

Equilibrium Bureaucratic Policymaking

Results in the policy-setting portion of the game are important for our analysis, but well known from previous work (especially Epstein and O'Halloran 1999). In this section we review these results briefly. The optimal policy choice is denoted by x^{*t} and is either a constant (in the case of an uninformed bureaucrat, $s = 0$) or a function

[20] Formally, this assumption represents an equilibrium refinement within the two-period setting that we are examining. In particular, we show that this presumption about second-period zealot behavior leads to first-period zealots acquiring information if and only if they will attempt to remain in government service (i.e., $g = 1$). Thus, a "new" zealot in the second period is observed only when the first-period bureaucrat was a slacker. Such a bureaucrat is by definition indifferent about the behavior of the second-period bureaucrat. Accordingly, the fact that this type of bureaucrat leaves the civil service after the first period is unaffected by this assumption. The downside of this assumption is that, viewed strictly within the two-period game, the equilibria we examine will frequently not be perfect in the sense that it relies upon a noncredible commitment by the second-period zealots. We find this difficulty untroubling, however, since the question of the second-period zealot's rationality is properly viewed within the infinitely repeated game that we are purposefully avoiding. It is not difficult to show that the equilibria that we examine in this article compose a Markov perfect equilibrium of the infinitely repeated version of this setting.

[21] This point is also raised in a different form in the discussion of Corollary 1.

of ω (for an informed bureaucrat, $s = 1$). The proofs of this, and all other results, are contained in the appendix.

Lemma 1. *In any perfect Bayesian equilibrium satisfying Assumption 3, for either period $t \in \{1, 2\}$, an uninformed bureaucrat chooses policy*

$$x^{*t} \in \underset{x \in [-D_t, D_t]}{\operatorname{argmax}} \left[-\int |p_B - (x + \omega)| \, dF(\omega) \right],$$

which reduces to $x^{*t} = \min[D, p_B]$.

Lemma 1 states that the equilibrium policy x^{*t} is in the interior of the discretionary region if the latter contains B's (ex ante) expected ideal policy, and at the boundary of the region otherwise.

For the case of an informed bureaucrat, the optimal policy choice is presented in Lemma 2. It asserts that the policy choice is B's ex post ideal, if this is in the discretionary window, or the closest policy inside the window otherwise.

Lemma 2. *In any perfect Bayesian equilibrium satisfying Assumption 3, for either period $t \in \{1, 2\}$, an informed bureaucrat chooses policy according to a function $x^{*t} : \Omega \to [-D_t, D_t]$ satisfying the following for all $\omega \in \Omega$:*

$$x^{*t}(\omega) \in \underset{x \in D_t}{\operatorname{argmax}} [-|p_B - (x + \omega)|],$$

which reduces to

$$x^{*t}(\omega) = \begin{cases} -D_t & \text{if} \quad p_B - \omega < -D_t \\ p_B - \omega & \text{if} \quad p_B - \omega \in [-D_t, D_t] \\ D_t & \text{if} \quad p_B - \omega > D_t. \end{cases}$$

Bureaucratic Payoffs. The expected period t policy payoff for the bureaucrat, given discretion D and expertise acquisition s, is denoted by $\phi^s(D)$. Specifically, given expertise acquisition s, discretion set by the legislature given s, and policy choice by the bureaucrat following the provision of discretion D, Lemmas 1 and 2 imply that this (expected) payoff is equal to

$$\phi^s(D) = \begin{cases} \max\limits_{x \in [-D, D]} \int_\Omega \pi(x + \omega) F(d\omega) & \text{if } s = 0 \\ \max\limits_{z \in D^\Omega} \int_\Omega \pi(z(\omega) + \omega) F(d\omega) & \text{if } s = 1, \end{cases}$$

where D^Ω denotes the set of functions from Ω into D. This is the set of possible strategies when the bureaucrat knows the true state, ω. The difference in these expressions is that when $s = 1$, B can condition policy on ω. The next lemma states some basic properties of ϕ^s.

Lemma 3. *The function $\phi^s : D \to \mathbb{R}$ satisfies the following properties.*

1. $\phi^1(D) > \phi^0(D)$ *for all* $D > 0$,
2. $\phi^1(0) = \phi^0(0)$,
3. $D' > D$ *implies that* $\phi^s(D') \geq \phi^s(D)$ *for all* $s \in \{0, 1\}$, *and*
4. $\phi^0(D) \leq \phi^0(p_B) = \phi^0(D')$ *for all* $D < p_B \leq D'$.

Self-Selection of Bureaucrats

A key question in our model is under what conditions a bureaucrat will decide to (attempt to) remain in the civil service after the first period. This decision depends on the outside option and government wage (w and r), the discretion that will be offered by the legislature (D^*), the type of the bureaucrat (θ), and the bureaucrat's expertise acquisition decision in the first period (s). We now analyze the decision calculus for slackers and zealots in turn.

Slackers' Decisions. Regardless of its expertise acquisition in the first period, the second-period payoff for a slacker (i.e., $\theta = 0$) who chooses to remain in civil service is simply r, whereas the payoff from leaving the civil service and taking the outside option is w. The assumption that $w > r$ (Assumption 1) immediately implies that all slackers exit the civil service after the first period, regardless of whether they acquired expertise or not.[22]

Zealots' Decisions. Using Assumptions 3 and 4 (the uninformed bureaucrats and overlapping generations assumptions), the expected payoff for a zealot who decides to leave office in the second period is equal to

$$w + \zeta \phi^1(D_1^*) + (1 - \zeta)\phi^0(D_1^*)$$

if zealots acquire expertise in the first period (i.e., $s^*(1) = 1$), and

$$w + \phi^0(D_1^*)$$

if neither type acquires expertise in the first period.[23] Given our assumption that $w > r$ (Assumption 1), no zealot will stay in office if it did not acquire expertise in the first period.[24] Combining this with the fact that type $\theta = 0$ bureaucrats never stay in office at $t = 2$, it then follows that no bureaucrats of either type will remain in

[22] Of course, slackers will not acquire expertise in equilibrium, as we note below.

[23] In theory, slackers could acquire expertise in the first period. However, we omit discussion of this possibility since such behavior is never observed in equilibrium (Lemma 5).

[24] A caveat: this is true unless $D_1^* < D_2^*(0)$. However, if this were the case, then the legislature would be granting *additional* discretion to bureaucrats who do not acquire expertise in the first period. This does not occur in equilibrium, as we show below (Proposition 2).

office in the second period if $s = 0$. Upon acquiring expertise, a zealot will choose to remain in the civil service in the second period only if

$$\phi^1\left(D_2^*(1)\right) - \phi^0\left(D_1^*\right) \geq w - r + \zeta\left(\phi^1\left(D_1^*\right) - \phi^0\left(D_1^*\right)\right). \tag{1}$$

This condition requires that the zealot's policy gains from staying, rather than being replaced by a random draw from the population of bureaucrats, must exceed the material cost of staying. Lemma 3 and Assumption 2 jointly imply that

$$\phi^1\left(D_1^*\right) - \phi^0\left(D_1^*\right) < c. \tag{2}$$

Applying Equation (2) to Equation (1) yields the following result.

Lemma 4. *Given Assumption 1, in any perfect Bayesian equilibrium,* $g^*(1, 1) = 1$ (i.e., *zealots who acquired expertise* ($s = 1$) *will choose to remain in office) if*

$$\phi^1\left(D_2^*(1)\right) - \phi^0\left(D_1^*\right) \geq w - r + \zeta c. \tag{3}$$

Furthermore, for any perfect Bayesian equilibrium, $g^*(1, 1) = 1$ *implies that Equation (1) is satisfied.*

Equation (3) expresses a key result.[25] Namely, a legislature attempting to create a skilled and experienced bureaucracy must offer policy-motivated experts increased control over the issue(s) that these bureaucrats care about.[26] Expert bureaucrats have a larger incentive to remain in the civil service after obtaining expertise if their discretion exceeds that available to their replacement, even an expert one. As this difference grows, an experienced expert bureaucrat has a greater ability to implement its preferred policy than will a replacement, even an expert one.[27] In short, discretion is a substitute for money, but only for zealots. Since fine-tuned wage contracts to induce expertise investment are not available to L in this model, it can turn to discretion to serve a similar purpose.

For the moment, suppose that the first-period bureaucrat (denoted by i) observes an idiosyncratic outside option, $\tilde{w}_i$, drawn from a distribution with strictly increasing cumulative distribution function and mean w. Then Equation (3) becomes

$$\phi^1\left(D_2^*(1)\right) - \phi^0\left(D_1^*\right) \geq \tilde{w}_i - r + \zeta c. \tag{4}$$

This temporary statistical addendum to the model makes the statement of comparative statics in the next proposition less awkward, as it allows us to address the probability of retaining an expert bureaucrat in the civil service as a function of four of the parameters of the model (w, r, ζ, and c).

Corollary 1. *Suppose the bureaucrat observes an outside option value* $\tilde{w}_i$ *at the beginning of the second period, as described above. Then, the probability that a bureaucrat who acquired expertise will remain in the bureaucracy is decreasing in the probability of zealots,* ζ; *decreasing in the cost of acquiring expertise,* c; *and increasing in the government wage,* r.

Consider the first conclusion of Corollary 1. Bureaucrats with expertise have less of an incentive to stay in the civil service when future bureaucrats are more likely to care about policy, because today's bureaucrat can choose not to stay in the civil service and still obtain the policy benefits of an expert bureaucrat in the future. As we show below, this also means sitting zealots have less incentive to acquire expertise in the first place as the probability of zealots ζ grows. When zealots are very common, a sitting zealot can essentially free ride on future zealots, who will acquire expertise if the first-period bureaucrat has an incentive to do so (Assumption 4). When slackers are very common, a zealot cannot leave the fine points of policymaking to someone else. Thus, expert administration represents a "public good" among zealots. Accordingly, when there are fewer of them in the population (i.e., when ζ is smaller), each is more likely to be pivotal for its provision.

The second and third conclusions of Corollary 1 are no less important empirically. If the cost of acquiring expertise increases, then the incentive for a bureaucrat to do so is directly reduced, ceteris paribus. Similarly, if the opportunity cost of leaving the bureaucracy (the government wage, r) increases, then the incentive to take the outside option is reduced as well. In this respect, the model obviously does not imply the absurd result that the government "should" set wages as low as possible.

Expertise Acquisition

The central theoretical concept of this article is the endogenous acquisition of expertise within a bureaucratic agency. In this section, we analyze the bureaucrat's

[25] It should be noted that Equation (3) simply provides a *sufficient* condition for retention of expert bureaucrats. This sufficient condition is itself sufficient for the presentation of the model's substantive predictions.

[26] This is of course provided that L does not outbid the outside option. However, if it did, it would retain not only zealots but also slackers, who can never be motivated to invest in expertise in equilibrium. In that case L would have to rely on ζ to raise the level of expertise in the bureaucracy.

[27] If the replacement's discretion were lower, *and* they wanted to do something different with it (i.e., p_b were different for the replacement), this would strengthen the sitting bureaucrat's incentive to stay. It would increase the utility difference between staying and letting the replacement take over.

decision calculus regarding expertise acquisition in detail. As in the previous section, we analyze this decision in turn for slackers and zealots.

Slackers' Expertise Decisions. For a slacker, the decision about whether to acquire expertise is simple. As noted above, slackers will not remain in the civil service in the second period, and relationship specificity of expertise means that w does not vary with its acquisition.[28] Thus, since acquiring expertise will not affect their first-period policy payoffs (by assumption, slackers' payoffs are insensitive to policy outcomes), acquiring expertise in the first period is a strictly dominated strategy for slackers. This fact implies Lemma 5.

Lemma 5. *Given Assumption 1, $s^*(0) = 0$ in any perfect Bayesian equilibrium: slackers never acquire expertise.*

Zealots' Expertise Decisions. In the sufficient condition stated in Lemma 4, a zealot must take into account its future employment decision (i.e., whether to remain in the civil service or take the outside option) when making a decision in the present about whether to acquire job-specific expertise. Bureaucrats will acquire expertise if they expect to garner net benefits from this acquisition. These benefits may take the form of "policy rents" offered by the legislature as a result of acquiring expertise. More expertise induces the legislature to offer more discretion in equilibrium, which is valued only by type $\theta = 1$ bureaucrats.[29]

The time horizon of policymaking also has an important impact on incentives of $\theta = 1$ bureaucrats. Given that $\phi^0(D) \leq \phi^1(D)$ for all D, that $\phi^s(D)$ is weakly increasing in D for both $s \in \{0, 1\}$ (Lemma 3), and that $D_2^*(0) \leq D_1^*$,[30] a zealot should acquire expertise and choose to stay in office (i.e., $s^*(1) = 1$ and $g^*(1, 1) = 1$) only if

$$(1 - \rho\zeta)\left(\phi^1\left(D_1^*\right) - \phi^0\left(D_1^*\right)\right) + \rho\left(r - w + \phi^1\left(D_2^*(1)\right) - \phi^0\left(D_1^*\right)\right) \geq c. \quad (5)$$

Equation (5) captures the effect of tenure security, reflected in ρ, on the maximum cost that a zealot is willing to incur to acquire expertise. Let $\bar{c}(\rho)$ denote the "cutoff cost" of expertise acquisition: if $c \leq \bar{c}(\rho)$, zealot bureaucrats will invest and otherwise they will not.

Proposition 1. *The maximum cost that a type $\theta = 1$ bureaucrat is willing to incur to acquire expertise, $\bar{c}(\rho)$, is increasing in ρ.*

This result emphasizes the retention aspects of tenure security, on top of the selection aspects of merit systems. Even if a patronage system were (somehow, counterfactually) to select exactly the same employees chosen under a merit selection system, the short horizon of the system inhibits the development of expertise, which lowers bureaucratic discretion, which inhibits the development of expertise still further. Even abstracting from the selection of competent employees, the stable, continuing employment of ones whose utility is especially sensitive to policy outcomes spurs the development of bureaucratic expertise. This implies that job tenure and "back door" restrictions on removal power—sometimes relegated to the status of mere power grabs in previous literature (e.g., Van Riper 1958, 40)—are actually crucial components of the incentives for expertise creation in civil service.

In this respect a policy-oriented legislature wants the expected length of employment for bureaucrats who might acquire expertise to be as long as possible. Increasing the security of tenure (i.e., increasing ρ) increases the relative appeal to B of a given level of increased discretionary authority in the future, as well as lengthening the horizon over which expertise investment can pay off. The future by itself is useless: it is an inducement only insofar as it holds something of value to B. Increased discretion as a result of expertise development creates this value when ρ is large.

While (ex post) the legislature only wants to retain expert bureaucrats, only bureaucrats who *have* acquired expertise will choose to remain on the job. Thus, it follows that with regard to the legislature's induced preferences over patronage versus job protection (i.e., ρ), the legislature can treat every new bureaucrat as if he or she will acquire expertise, since those who choose not to do so will voluntarily exit the civil service. This fact is important for the remainder of the analysis, and therefore stated formally as a corollary.

Corollary 2. *Given Assumptions 1 and 2, in any perfect Bayesian equilibrium satisfying Assumptions 3 and 4,*

[28] Of course, assuming *complete* relationship specificity is useful because it makes the results simpler, not because it is always literally true. Relaxing this assumption and allowing for some intermediate degree of relationship specificity preserves the crucial part of the intuition that $\theta = 1$ bureaucrats have more incentive to acquire expertise than $\theta = 0$ bureaucrats, and do so for more values of c.

[29] If expertise investment were unobservable, discretion would still function as a type- and action-contingent "payment," while monetary incentives for expertise investment (by either type) would not be useful. It is straightforward to show that in this case, the only bureaucrats that actually stay in office are expert zealots. The legislature is happy to cede discretion to agents in office in period 2, and given $w \geq r$, only zealots would find it worthwhile to remain in public service. At the time of the expertise investment decision they can forecast these conditions and know that their investment will pay off because of the sensitivity of their preferences to the state and policy choice.

[30] The validity of this assertion is shown later in the article (Propositions 2 and 3).

$g^*(\theta, s) = 1$ *implies that* $\theta = 1$ *and* $s = 1$: *a bureaucrat who remains in office in the second period must be a zealot who acquired expertise in the first period.*

The Legislature's Choice of Discretion Profile

The analysis thus far has considered the incentives facing the bureaucrat, given a profile of discretionary window sizes offered by the legislature. We now complete the analysis by considering what discretionary profiles will be offered by a rational legislature, given its recognition of the bureaucrat's incentives to acquire expertise and/or take the outside option in the second period.

In a perfect Bayesian equilibrium, the legislature must choose discretion optimally given past decisions by all players and (correct) expectations of future decisions. That is, the legislature cannot commit to its future awards of discretion. Discretion levels must be optimal from an *interim* standpoint—but as long as they are, they may be treated as credible commitments. Some additional notation will help to make the following analysis more precise. For any discretion level D, let

$$\hat{z}_D = \underset{x\in[-D,D]}{\operatorname{argmax}} \int_\Omega \pi(x+\omega)F(d\omega) \tag{6}$$

$$z_D(\cdot) = \underset{z\in D^\Omega}{\operatorname{argmax}} \int_\Omega \pi(z(\omega)+\omega)F(d\omega) \tag{7}$$

denote the optimal choices of uninformed (Equation (6)) and informed (Equation (7)) bureaucrats, conditional on the level of discretion offered by the legislature, D. We assume (essentially without loss of generality) that, for each level of discretion D, both $\hat{z}_D$ and $z_D(\cdot)$ are uniquely defined.[31] Using these policy choice functions, we now define the following implicit policy payoff function for the legislature over expertise and discretionary windows:

$$\gamma^s(D) = \begin{cases} -\int_\Omega |\hat{z}_D + \omega| F(d\omega) & \text{if } s = 0 \\ -\int_\Omega |z_D(\omega) + \omega| F(d\omega) & \text{if } s = 1, \end{cases}$$

The function $\gamma^s(D)$ defines the legislature's policy utility as a function of discretion and expertise, supposing that the agent makes policy according to either Equation (6) or (7). By further incorporating the earlier analysis of the bureaucrat's incentive to acquire expertise, the legislature's payoff function can now be written as a function only of

$$D = (D_1, D_2(0), D_2(1)).$$

As noted above, slackers will never acquire expertise in equilibrium (Lemma 5) and bureaucrats will attempt to remain in the civil service in the second period only if they acquired expertise in the first period (Corollary 2). These facts jointly imply that there are only two possible "types" of pure strategy perfect Bayesian equilibria: one in which no bureaucrats acquire expertise and all bureaucrats exit the civil service after the first period, and a second type of equilibrium where zealots (and only zealots) acquire expertise in the first period and all those who acquire expertise attempt to remain in the civil service in the second period. In the first type of PBE, where all bureaucrats choose not to acquire expertise, the legislature's expected payoff is

$$u_L^1(D) = \gamma^0(D_1),$$

while in the second type of PBE, in which all zealots (and only zealots) acquire expertise, the legislature's expected payoff is

$$u_L^2(D) = (1 + (1-\zeta))\left[\zeta\gamma^1(D_1) + (1-\zeta)\gamma^0(D_1)\right] + \zeta\left[\gamma^1(D_2(1))\right].$$

The legislature's strategic problem therefore comes down to choosing optimal levels of discretion. To that end, define the following values:

$$\Delta_0^* \equiv \underset{d\in\mathbb{R}_+}{\operatorname{argmax}}\, \gamma^0(d) \tag{8}$$

$$\Delta_1^* \equiv \underset{d\in\mathbb{R}_+}{\operatorname{argmax}}\, \zeta\gamma^1(d) + (1-\zeta)\gamma^0(d). \tag{9}$$

$$\Delta_2^* \equiv \underset{d\in\mathbb{R}_+}{\operatorname{argmax}}\, \gamma^1(d) \tag{10}$$

In words, Δ_0^* in Equation (8) is the optimal level of discretion conditional on no bureaucrats acquiring expertise—this is the equilibrium level of discretion offered in all periods in the first type of PBE discussed above. The value of Δ_1^*, as defined in Equation (9), is the equilibrium level of first-period discretion in the second type of PBE, while Δ_2^* is the equilibrium level of discretion in the second period of the second type of PBE *conditional on the bureaucrat acquiring expertise in the first period.*[32]

The next result characterizes the optimal levels of discretion defined in Equations (8), (9), and (10). In words, the Proposition states that the legislature in this setting

[31] This is "essentially without loss of generality" because the legislature could break any indifference between multiple solutions to either equation by simply choosing one such solution arbitrarily.

[32] Put another way, this is the legislature's sequentially rational level of discretion if the legislature knows that the bureaucrat possesses expertise.

gives *zero* discretionary authority to the bureaucrat when the legislature expects that the bureaucrat will not acquire expertise. This is intuitive, once one realizes that the legislature and an uninformed bureaucrat are equally adept at setting policy. Hence, granting any discretion to an uninformed bureaucrat is weakly dominated from the legislature's perspective. The second part of the Proposition states that the discretion granted to a second-period bureaucrat will be at least as great as the discretion granted to a new bureaucrat. This follows from the fact that, given Assumptions 1 and 2, second-period bureaucrats will, without exception, be experts, while in the first period, the bureaucrat may be a slacker and not acquire expertise. Accordingly, when granting discretion to a first-period bureaucrat who *may* acquire expertise, the legislature should hedge its bets and offer what is generally an intermediate degree of discretion.

Proposition 2. *Given Assumptions 1–4,*

$$\Delta_0^* = 0$$

and

$$\Delta_1^* \leq \Delta_2^*.$$

Legislative Incentives. Whether zealots acquire expertise and attempt to remain in the bureaucracy in equilibrium, or whether all bureaucrats refrain from acquiring expertise and leave the bureaucracy after the first period, depends on the strength of the legislature's desire for informed policymaking. If the legislature does not gain enough from informed policymaking to warrant the agency cost of granting policymaking discretion to the agency, then the equilibrium civil service system will involve neither rewards for expertise acquisition (in the form of future discretion) nor the acquisition of expertise by bureaucrats.[33] The cost of providing discretionary incentives results from the expected drift of policy outcomes toward the bureaucrat's policy objectives, p_B (McCubbins, Noll, and Weingast 1987), and this must be balanced against discretion's value as an inducement.[34]

The legislature's preference for informed policymaking (and voluntary return to the bureaucracy) by zealots over uninformed policymaking by both types of bureaucrats is captured formally by

$$(2-\zeta\rho)\left(\zeta\gamma^1\left(\Delta_1^*\right)+(1-\zeta)\gamma^0\left(\Delta_1^*\right)\right) + \zeta\rho\gamma^1\left(\Delta_2^*\right) \geq 2\gamma^0\left(\Delta_0^*\right). \quad (11)$$

If Inequality (11) does *not* hold, then the legislature will give zero policymaking discretion to the bureaucrat in both periods, regardless of the level of expertise.

The right-hand side of Inequality (11) describes the (ex ante expected) value of informed policymaking to the legislature, given the legislature's sequentially rational provision of discretion and the bureaucrat's equilibrium behavior. The term $\zeta\rho\gamma^1(\Delta_2^*)$ represents the expected value of expert policymaking by an experienced zealot. This term plays a bigger role in the legislature's expected payoff as ζ and ρ both increase. Not only *B*'s incentive to *acquire* it, but also *L*'s incentive to *reward* expertise acquisition depends crucially on the security of tenure.

While Inequality (11) is a necessary condition for an experienced and expert civil service to result from equilibrium behavior by both legislature and bureaucrats, it is not sufficient. As discussed earlier, the acquisition of expertise within a bureaucratic agency is the result of voluntary decision making and thus, in equilibrium, also subject to an incentive compatibility condition.

Bureaucratic Incentives. Even if the legislature is willing to bear the agency costs associated with granting discretion to the bureaucrat, zealots may deem the acquisition of expertise too costly to bear. For example, the direct cost c of expertise acquisition may simply outweigh the bureaucrat's (expected) policy benefits of informed policymaking. Thus, even if the legislature is willing and able to grant discretion to informed/expert bureaucrats who remain in the civil service, zealots may nevertheless refrain from acquiring expertise. Substituting Δ_1^* for D_1^* and Δ_2^* for $D_2^*(1)$ in Inequality (5) directly yields the following incentive compatibility condition for zealots to acquire expertise in equilibrium:

$$(1-\rho\zeta)\left(\phi^1\left(\Delta_1^*\right)-\phi^0\left(\Delta_1^*\right)\right) + \rho\left(r-w+\phi^1\left(\Delta_2^*\right)-\phi^0\left(\Delta_1^*\right)\right) \geq c. \quad (12)$$

If Inequality (12) fails to hold, then the legislature is *unable* to offer a sequentially rational discretion profile that offers zealot bureaucrats sufficient incentive to acquire expertise. Note the role of ρ in Inequality (12): the policy gains from expert policymaking in the second period are multiplied by this probability of being allowed to remain in the civil service. As tenure security goes down,

[33] This is related to the point made by Ferejohn (1999). While Ferejohn considers elected officials as agents and voters as principals, the fact that an agent must take into consideration the principal's future incentives when deciding its current behavior links our work with his. We thank Ken Shepsle for pointing this out to us.

[34] A more "direct" cost might occur if different forms of authorizing legislation are more or less costly to write, as in Huber and Shipan (2002) and Huber and McCarty (2004).

a zealot values the possibility of future discretionary authority less. Thus, a legislature that is less able to commit to retaining experienced bureaucrats who wish to remain in the bureaucracy will face a higher hurdle to inducing voluntary acquisition of bureaucratic expertise.

Discretion as an Inducement in Equilibrium

The next proposition states that the joint satisfaction of Inequalities (11) and (12) is a necessary and sufficient condition for the legislature to reward expertise acquisition with additional discretionary authority in equilibrium. If either fails to hold, the legislature will offer no discretionary authority to the bureaucrat in equilibrium. For the following, denote a parameter vector by $\mathcal{P} = (\rho, \zeta, p_B, F, r, c, w)$.

Proposition 3. *The legislature's optimal discretion profile in its most preferred perfect Bayesian equilibrium, given* $\mathcal{P}$, *denoted by* $D^*(\mathcal{P}) = (D_1^*(\mathcal{P}), D_2^*(0 \mid \mathcal{P}), D_2^*(1 \mid \mathcal{P}))$, *is given by*

1. (*Type* **I.**) $D^*(\mathcal{P}) = (\Delta_0^*, \Delta_0^*, \Delta_0^*)$ *if either Inequality (11) or Inequality (12) fails to hold, and*
2. (*Type* **II.**) $D^*(\mathcal{P}) = (\Delta_1^*, \Delta_0^*, \Delta_2^*)$ *otherwise.*

Type **I** equilibria are akin to a "regime of clerkship" (Carpenter 2001). The legislature offers the bureaucrat no reward for expertise acquisition. Accordingly, no bureaucrats of either type acquire expertise in Type **I** equilibria, and all bureaucrats leave the civil service after the first period. There is no bureaucratic decision making of any import: the bureaucrat is simply paid a wage of r to implement the status quo policy, $x = 0$. Expert judgment is not important enough to be rewarded, given the costs of doing so. One implication of Type **I** equilibrium is that civil service protection inducing bureaucratic expertise is not universally best for L in our model. For example, when policy is not subject to important uncertainty (e.g., is limited in complexity, largely redistributive, etc.), or bureaucratic preferences are highly divergent from legislative preferences, this type of equilibrium may be preferred by L.

Type **II** equilibria represent "politicized competence." The legislature offers a discretion profile in which all (and only) the policy-motivated bureaucrats develop expertise in the first period and voluntarily remain in office in the second period. The choice by the legislature to offer discretionary authority to expert bureaucrats provides sufficient incentive for zealots to acquire expertise in the first period.[35] In a Type **II** equilibrium, all zealots (and only zealots) acquire expertise and attempt to remain in the civil service in the second period. Substantively, this equilibrium represents a modern, professionalized, but politicized administrative agency. A noteworthy implication of this proposition is that there is no "Type **III**" equilibrium in which slackers invest in expertise and disinterestedly implement L's ideal policy,[36] thereby achieving "neutral competence." Such an "equilibrium" would fail the incentive compatibility requirement for bureaucrats. In short, the legislature can have either politicized competence or none at all. It may have reasons for preferring either one, but given the contractual and incentive constraints in this model, those are the only options.

Another important implication is that L's preference among equilibria is sufficient to implement its most preferred one. The legislature must simply set its sequentially rational level of discretion, and the equilibrium it prefers (given parameters and constraints) follows from the best response of B. Furthermore, if L desires perfect sorting of B by θ, and desires expertise acquisition, it can achieve this in equilibrium. Therefore, L could not improve on its utility if it were a "mechanism designer," able to precommit to specific responses (in terms of discretion levels) to expertise investment and self-selection decisions by B (and, by implication, L cannot attain a "Type III" or "neutral competence" equilibrium by controlling θ itself). For example, the legislature is not best responding if it "artificially" restricts first-period discretion to a level less than Δ_1^*.[37]

A third implication of the model can be gleaned from the observed behavior in a Type **II** equilibrium. A bureaucrat attempts to remain in the bureaucracy only after choosing to acquire expertise. Experienced bureaucrats will be promoted or rewarded for their service. This follows from the sequential rationality of L's behavior. Why would the legislature bother to offer rewards that it did not expect to be achieved in equilibrium? In this respect the equilibrium-behavior-based linkage between stability and expertise within a bureaucracy is apparent. Expert administration may be occurring precisely when L

[35] If the discretion-based incentives were not sufficient, then the profile given by $D^*(\mathcal{P})$ would not represent an equilibrium.

[36] Such behavior is not addressed or ruled out by Assumption 3, which only addresses the policy choices of *uninformed* slackers.

[37] This solution does not work insofar as it does not lead to the retention of zealots. Indeed, such a strategy by the legislature may *hasten* the departure of zealots, as they will prefer to hand over the reins to new bureaucrats who will not face the reduced discretion punishment for at least one period.

appears to be simply endorsing an agency where promotions and policymaking discretion seem to follow simply from "years served" in the agency. This suggests a (positive) link between bureaucratic ossification and expert administration, based on the possibility of Type **II** equilibria.

Comparative Statics

The discussion of Proposition 3 takes the occurrence of a given type of equilibrium as given, but this begs the question of when each type will exist. Here we explore conditions on the parameters that give rise to equilibria of each type.[38]

When considering which of the two classes of equilibria will be observed, the principal question is whether the legislature is willing to bear the cost required to provide the bureaucrat with sufficient incentive to become an expert. The legislature's benefits from informed policymaking (i.e., Type **II** equilibrium) depend on the degree of uncertainty about future policy outcomes (captured by the distribution $F(\omega)$, and indirectly by ρ). Increased discretion imposes two types of cost on the legislature, both of which are due to policy drift (McCubbins, Noll, and Weingast 1987). The first comes from nonexpert bureaucrats and the second from bureaucrats who acquire expertise. Bureaucrats who do not acquire expertise will simply shift policy outcomes toward p_B (Lemma 1). In expected payoff terms, this is a "pure" cost—the legislature would prefer to offer zero discretion to any bureaucrat who was known to be a nonexpert. The cost of policy drift from expert policymaking is also related to p_B, though in a less direct way. An expert policymaker with complete discretion (i.e., a bureaucrat with $D = \infty$) will always produce a policy outcome of $y = p_B$. While not the first best outcome from the legislature's standpoint, this might represent a higher payoff than results from uninformed policymaking with zero discretion. And, to further complicate matters, more extreme values of p_B will make it easier for the legislature to provide an incentive for zealots to acquire expertise, as the alternative outcome—reduced discretion for a (possibly slacker) bureaucrat—will be increasingly unpleasant. Accordingly, the effect of p_B is not simple. The role of policy uncertainty, as embodied by F, is more direct. In the most extreme case, F represents a degenerate distribution, assigning probability one to $\omega = 0$. In this case, the legislature will (strictly) prefer a grant of zero discretion ($D = 0$) to any other discretionary level. This preference for zero discretionary authority is independent of whether the bureaucrat is informed or not. Obviously, the bureaucrat would never acquire expertise in such a world anyway. Similarly, suppose that F places a sufficiently high probability on $\omega = 0$. Then, even if L grants substantial discretionary authority to B, B's (expected) policy gains from acquiring expertise will not outweigh the cost c of expertise acquisition. In other words, even if the agent has sufficient authority to "make a difference" with sufficient policymaking powers, the incentive to acquire expertise is proportional to the amount of variance in the situations about which the expertise will provide guidance. Thus, the incentives motivating both the supply of, and demand for, expertise vanish as the distribution of ω converges to a degenerate point mass at zero. Accordingly, the legislature's most preferred PBE in situations "near" this limit must be a Type **I** equilibrium.

Finally, the effects of r, w, and c on equilibrium type are straightforward. If the governmental wage is too low relative to the outside option or if acquiring expertise is too costly, then L's most preferred PBE is a Type **I** equilibrium. These comparative statics result from the inability of the legislature to offer sufficient incentive to the bureaucrat to justify the acquisition of expertise. In equilibrium, the legislature realizes this and sets discretion under the (correct) belief that neither slackers nor zealots will acquire expertise in either period. Proposition 4 offers a more formal statement of the effects of the parameters on the type of equilibrium that will be observed.

Proposition 4. *The legislature's most preferred perfect Bayesian equilibrium does not reward expertise acquisition (i.e., it is a Type* **I** *equilibrium) if*

1. ρ *is sufficiently close to zero,*
2. ζ *is sufficiently close to one,*
3. p_B *is sufficiently large,*
4. r *is sufficiently less than* w*, or*
5. c *is sufficiently large.*

Most interesting are the effects of ρ (tenure security), ζ (probability of policy-interested bureaucrats), p_B (ideological difference between agency and legislature), and F (noisiness of policy outcomes relative to the bureaucrat's policy choice). All of these determine L's preferred equilibrium through their effect on a zealot's incentive to acquire expertise. For example, if tenure security is low (low ρ), then the legislature may be unable (or unwilling) to grant enough discretion in the first period to make

[38] One could also examine the effect of the model's parameters on the size of the discretionary windows in the Type **II** class of equilibria. These comparative static results are fairly standard, though, and also depend (even more) sensitively on the functional forms that we have assumed for the players' utility functions.

acquisition of expertise individually rational for zealots. Similarly, if ideological differences between the agency and the legislature are large, then the possible cost of uninformed decision making in the first period may outweigh the expected benefits from informed decision making, leading the legislature to offer no discretion whatsoever (even though, fixing D, larger p_B makes B *more* willing to acquire expertise).

Conclusion

This article is based on the idea that bureaucratic policy expertise is, at some level, endogenous. In addition, policy expertise and individually costly investments in expertise, policymaking capacity, and information gathering are often relationship specific. Therefore these investments are subject to a potential holdup problem. The return on them depends jointly on the political environment of bureaucracies and on the personnel management practices and institutions in government.[39] A government facing contractual, informational, and incentive constraints can induce the development of relationship-specific expertise by (1) instituting relatively common civil service practices—notably, protection of job tenure and lower material rewards than an available outside option, and (2) granting bureaucrats some measure of control over policy issues they care about. Such a solution comes with an extra requirement: the bureaucrats who acquire expertise and make careers in public service are exactly those who have unusually strong policy preferences. Neutral competence is impossible in our model not because "neutrality" is impossible, but because only those with a stake in policy can be induced (by the limited instruments available) to become experts. In short, we have argued first that politicized competence is the best kind available in equilibrium, and second that the best available does emerge under our formalization of bureaucratic institutions. In this respect bureaucracies present political principals with an agency problem they themselves designed and that serves a useful purpose (if not the reason they created it). Our main contribution has been to show that, and to show precisely how, the political and personnel management aspects of bureaucratic institutions are jointly sufficient and individually necessary to sustain a high-capacity, expert bureaucracy.

[39]This is true of many professions and voluntary economic relationships, of course, but is especially relevant for government positions, given their often unique nature.

Appendix A
Proofs

Proposition 1. The proof follows directly from Equation (12).

Proposition 2. Given Assumptions 1–4,

$$\Delta_0^* = 0$$

and

$$\Delta_1^* \leq \Delta_2^*.$$

Proof: **1.** $\Delta_0^* = 0$. Given that both slackers and zealots choose to not acquire expertise, the legislature's weakly dominant strategy is to require that all bureaucrats implement its ex ante (i.e., uninformed) optimal policy choice. Given the assumed function form for u_L, this optimal policy choice is the median of F, which is zero.

2. $\Delta_1^* \leq \Delta_2^*$. Suppose that $\Delta_1^* > \Delta_2^*$ and consider the following:

$$\begin{aligned}&\zeta\gamma^1(\Delta_1^*) + (1-\zeta)\gamma^0(\Delta_1^*) - \zeta\gamma^1(\Delta_2^*) + (1-\zeta)\gamma^0(\Delta_2^*)\\ &= \zeta\left(\gamma^1(\Delta_1^*) - \gamma^1(\Delta_2^*)\right) + (1-\zeta)\left(\gamma^0(\Delta_1^*) - \gamma^0(\Delta_2^*)\right).\end{aligned} \tag{13}$$

As argued above, $\gamma^0(d)$ is a (weakly) decreasing function of d. By construction, $\gamma^1(\Delta_1^*) < \gamma^1(\Delta_2^*)$. Thus, the right-hand side of Equation (13) is the convex combination of two nonpositive terms, implying that setting $\Delta_1^* = \Delta_2^*$ will result in a (weakly) higher payoff for the legislature. ■

Proposition 3. Given the lemmas and the discussion contained in the article, the proof of this proposition is straightforward and omitted.

Proposition 4. The equilibrium is Type **I** (i.e., $D^*(\mathcal{P}) = (\Delta_0^*, \Delta_0^*, \Delta_0^*)$), if

1. ρ is sufficiently close to zero,
2. ζ is sufficiently close to one,
3. p_B is sufficiently large,
4. r is sufficiently less than w, or
5. c is sufficiently large.

The proof of the proposition is broken into five parts, presented sequentially as in the statement of the proposition. For each statement, the proof consists of showing that at least one of Inequalities (11) and (12) fails to hold, at which point Proposition 3 implies the corresponding statement of this proposition. For simplicity, we will denote by $\tilde{\mathcal{P}}_n$ the subspace of the space of all parameters $\mathcal{P}$ determined by holding all vectors other than n fixed

at the point defined by $\mathcal{P}$ and allowing n to vary within its entire set of feasible values. Note that this space might itself depend upon $\mathcal{P}$ (e.g., $\bar{\mathcal{P}}_r$ includes only values of $r < w^{\mathcal{P}}$, where $w^{\mathcal{P}}$ is the value of w contained in $\mathcal{P}$). We will denote a point in $\bar{\mathcal{P}}_n$, with $n = \hat{n}$, by $\mathcal{P}_{n=\hat{n}}$.

1. ρ is sufficiently close to zero.

   Proof: There exist $\mathcal{P}$ satisfying Assumptions 1 and 2 such that Inequality (11) holds for all $\hat{\mathcal{P}} \in \mathcal{P}_\rho$. Thus, we examine Inequality (12). Fix $\mathcal{P}$ and consider $\mathcal{P}_{\rho=0}$. Inequality (12) then becomes

   $$\phi^1(\Delta_1^*) - \phi^0(\Delta_1^*) \geq c.$$

   If this holds, then $\mathcal{P}$ violates Assumption 2. Thus, it must be the case that

   $$\phi^1(\Delta_1^*) - \phi^0(\Delta_1^*) < c. \tag{14}$$

   Furthermore, $(1 - \rho\zeta)\,(\phi^1(\Delta_1^*) - \phi^0(\Delta_1^*)) + \rho(r - w + \phi^1(\Delta_2^*) - \phi^0(\Delta_1^*))$ is continuous in ρ within $\mathcal{P}_\rho$. Therefore, there exists a (relatively) open neighborhood of $\rho = 0$ within $\mathcal{P}_\rho$, denoted by $R(\mathcal{P}_{\rho=0}) \subset [0, 1]$, such that Inequality (14) holds for all $\rho \in R(\mathcal{P}_{\rho=0})$. ∎

2. ζ is sufficiently close to one.

   Before proving this statement, we state the following fact (the proof of which is straightforward and omitted).

   Fact 1. *If* $\zeta = 1$, *then* $\Delta_1^* = \Delta_2^*$.

   We now proceed to the proof of the statement from the proposition.

   Proof: As with the previous statement (concerning ρ near zero), it can be shown that there exist $\mathcal{P}$ satisfying Assumptions 1 and 2 such that Inequality (11) holds for all $\hat{\mathcal{P}} \in \mathcal{P}_\rho$. Accordingly, we examine Inequality (12).

   Fix $\mathcal{P}$ and consider $\mathcal{P}_{\zeta=1}$. Fact 1 allows us to use Δ_3^* to denote the (identical) values of Δ_1^* and Δ_2^*, so that Inequality (12) reduces to

   $$\begin{aligned}(1 - \rho)\big(\phi^1(\Delta_3^*) - \phi^0(\Delta_3^*)\big) \\ + \rho\big(r - w + \phi^1(\Delta_3^*) - \phi^0(\Delta_3^*)\big) \geq c \\ \phi^1(\Delta_3^*) - \phi^0(\Delta_3^*) + \rho(r - w) \geq c. \end{aligned} \tag{15}$$

   Assumption 1 implies that $r - w < 0$. Thus, satisfaction of Inequality (15) implies that

   $$\phi^1(\Delta_3^*) - \phi^0(\Delta_3^*) \geq c + \rho(w - r) > c,$$

   which violates Assumption 2. Accordingly, it must be the case that

   $$\phi^1(\Delta_3^*) - \phi^0(\Delta_3^*) + \rho(r - w) < c. \tag{16}$$

   Rewriting Inequality (12) with $\Delta_3^* = \Delta_1^* = \Delta_2^*$ and following the standard continuity arguments as used in the proof of the previous statement, it is straightforward to see that Inequality (16) implies the existence of a relatively open neighborhood of 1, denoted by $R(\mathcal{P}_{\zeta=1}) \subset [0, 1]$, such that

   $$(1 + \rho(1 - \zeta))\big(\phi^1(\Delta_3^*) - \phi^0(\Delta_3^*)\big) + \rho(r - w) < c$$

   for all ζ in $R(\mathcal{P}_{\zeta=1})$. ∎

3. p_B is sufficiently large.

   This proof utilizes the following fact in which the dependence of $\gamma^s(D)$ on p_B is temporarily made explicit by the use of the notation $\gamma^s_{p_B}(D)$.

   Fact 2. *For any cumulative distribution function F with finite variance, there exists* $\tilde{p}_B^F$ *such that, for all* $p_B > \tilde{p}_B^F$ *and all* $D > 0$,

   $$\gamma^0_{p_B}(0) > \gamma^1_{p_B}(D) \geq \gamma^0_{p_B}(D).$$

   Proof: Fix $\mathcal{P}$ and, for some $\hat{p}_B^F > \tilde{p}_B^F$ (where $\tilde{p}_B^F$ is defined as in Fact 2), consider $\mathcal{P}_{p_B=\hat{p}_B^F}$. Then it follows that

   $$\Delta_1^* = \Delta_2^* = \Delta_0^* = 0. \tag{17}$$

   Finally, since $\hat{p}_B^F$ has only been specified insofar as requiring that $\hat{p}_B^F > \tilde{p}_B^F$, the statement follows. ∎

4. r is sufficiently less than w.

   Proof: Fix $\mathcal{P}$ satisfying Assumptions 1 and 2 and with $\rho > 0$.[40] Then it is clear that there exists some $\tilde{r}_{\mathcal{P}} \in \mathbb{R}$ such that $\hat{r} < \tilde{r}_{\mathcal{P}}$ implies that[41]

   $$\begin{aligned}(1 - \rho\zeta)\big(\phi^1(\Delta_1^*) - \phi^0(\Delta_1^*)\big) \\ + \rho\big(\hat{r} - w + \phi^1(\Delta_2^*) - \phi^0(\Delta_1^*)\big) < c,\end{aligned}$$

   violating Inequality (12). Since this holds for all $\hat{r} < \tilde{r}_{\mathcal{P}}$, the statement follows. ∎

[40] This is without loss of generality, since (as we have already shown) $\rho = 0$ and satisfaction of Assumptions 1 and 2 jointly imply violation of Inequality (12).

[41] Note that $\tilde{r}_{\mathcal{P}}$ may be negative—this possibility is not inconsistent with our model, even if it is slightly inconsistent with modern experience. It is, however, not entirely implausible when viewed from a historical perspective. One of the principal early achievements of the Pendleton Act, for example, was the (near) elimination of "assessments" imposed by party officials upon bureaucrats, whereby financial contributions were extracted from those holding patronage positions in the federal government (Skowronek 1982).

5. c is sufficiently large.

Proof: Fix $\mathcal{P}$ satisfying Assumptions 1 and 2. It is clear that there exists some $\tilde{c}_{\mathcal{P}} \in \mathbb{R}$ such that $\hat{c} > \tilde{c}_{\mathcal{P}}$ implies that

$$(1-\rho\zeta)\left(\phi^1(\Delta_1^*)-\phi^0(\Delta_1^*)\right) + \rho\left(r-w+\phi^1(\Delta_2^*)-\phi^0(\Delta_1^*)\right) < \hat{c},$$

violating Inequality (12). Since this holds for all $\hat{c} > \tilde{c}_{\mathcal{P}}$, the statement follows. ∎

Lemma 1. This follows from the arguments contained in Epstein and O'Halloran (1999, chap. 4).

Lemma 2. This follows from the arguments contained in Epstein and O'Halloran (1999, chap. 4).

Lemma 3. The following properties characterize $\phi^s : D \to \mathbb{R}$.

1. $\phi^1(D) > \phi^0(D)$ for all $D > 0$,
2. $\phi^1(0) = \phi^0(0)$,
3. $D' > D$ implies that $\phi^s(D') \geq \phi^s(D)$ for all $s \in \{0, 1\}$, and
4. $\phi^0(D) \leq \phi^0(p_B) = \phi^0(D')$ for all $D < p_B \leq D'$.

Proofs of the lemma's claims. Each of the four claims about ϕ is demonstrated separately.

1. $\phi^1(D) > \phi^0(D)$ for all $D > 0$.

Proof: Since the set of constant functions from Ω into $[-D, D]$ is a subset of the set of all functions from Ω into $[-D, D]$, maximizing any objective function with respect to the latter must do no worse than maximizing the same objective function with respect to the former. Therefore, $\phi^1(D) \geq \phi^0(D)$ for all $D > 0$. This inequality is strict because F has strictly positive variance. ∎

2. $\phi^1(0) = \phi^0(0)$.

Proof: The set of all functions from Ω into $\{0\}$ is a singleton. Namely, it is the constant function taking on the value of 0 for all Ω. ∎

3. $D' > D$ implies that $\phi^s(D') \geq \phi^s(D)$ for all $s \in \{0, 1\}$.

Proof: The set of all functions from Ω into $[-D, D]$ is a proper subset of the set of all functions from Ω into $[-D', D']$. See the proof of (1), above. ∎

4. $\phi^0(D) \leq \phi^0(p_B) = \phi^0(D')$ for all $D < p_B \leq D'$.

Proof: (i) $D < p_B \Rightarrow \phi^0(D) \leq \phi^0(p_B)$. Regardless of type, θ, an uninformed bureaucrat's best response set contains max $[-D, -p_B]$. Thus, for $D < p_B$, $\phi^0(D) \leq \phi^0(p_B)$.
(ii) $p_B \leq D' \Rightarrow \phi^0(p_B) = \phi^0(D')$. Again, regardless of type, θ, an uninformed bureaucrat's best response set contains max $[-D, -p_B]$. Thus, it is without loss of generality to suppose that increasing D past p_B does not change the bureaucrat's strategy. Since F is assumed to be fixed, this implies that the uninformed bureaucrat's implicit policy payoff function from D does not vary with D once D exceeds p_B. ∎

Lemma 4. This lemma follows directly from Equation (4).

Lemma 5. This proof follows straightforwardly from the presentation in the main text.

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